

the same effect: only where the Light is brightest, there the Colours are most *vivid*. So does the light of a Candle, collected by a Glass-ball. And further, it is all one whatever side of the coloured Rings be towards the light; for the whole Ring keeps its proper Colours from the middle outwards in the same order as I before related, without varying at all, upon changing the position of the light.

But above all it is most observable, that here are all kind of Colours generated in a pellucid body, where there is properly no such refraction as Des Cartes supposes his Globules to acquire a *verticity* by: For in the plain and even Plates it is manifest, that the second refraction (according to Des Cartes his Principles in the fifth section of the eighth Chapter of his *Meteors*) does regulate and restore the supposed *turbinated Globules* unto their former uniform motion. This Experiment therefore will prove such a one as our *thrice excellent Verulam* calls *Experimentum Crucis*, serving as a Guide or Land-mark, by which to direct our course in the search after the true cause of Colours. Affording us this particular negative Information, that for the production of Colours there is not necessary either a great refraction, as in the Prism; nor Secondly, a determination of Light and shadow, such as is both in the Prism and Glass-ball. Now that we may see likewise what affirmative and positive Instruction it yields, it will be necessary, to examine it a little more particularly and strictly; which that we may the better do, it will be requisite to premise somewhat in general concerning the nature of Light and Refraction.

And first for Light, it seems very manifest, that there is no luminous Body but has the parts of it in motion more or less.

First, That all kind of *fiery burning Bodies* have their parts in motion, I think, will be very easily granted me. That the *spark* struck from a Flint and Steel is in a rapid agitation, I have elsewhere made probable. And that the Parts of *rotten Wood, rotten Fish*, and the like, are also in motion, I think, will as easily be conceded by those, who consider, that those parts never begin to shine till the Bodies be in a state of putrefaction; and that is now generally granted by all, to be caused by the motion of the parts of putrifying bodies. That the *Bononian stone* shines no longer then it is either warmed by the Sun-beams, or by the flame of a Fire or of a Candle, is the general report of those that write of it, and of others that have seen it. And that heat argues a motion of the internal parts, is (as I said before) generally granted.

But there is one Instance more, which was first shewn to the *Royal Society* by Mr. Clayton a worthy Member thereof, which does make this Assertion more evident then all the rest: And that is, That a *Diamond* being *rub'd, struck, or heated* in the dark, shines for a pretty while after, so long as that motion, which is imparted by any of those Agents, remains (in the same manner as a Glass, *rub'd, struck, or* (by a means which I shall elsewhere mention) heated, yields a sound which lasts as long as the *vibrating motion* of that *sonorous body*) several Experiments made on which Stone, are since published in a Discourse of Colours, by the truly

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honourable Mr. Boyle. What may be said of those *Ignes fatui* that appear in the night, I cannot so well affirm, having never had the opportunity to examine them my self, nor to be inform'd by any others, that had observ'd them: And the relations of them in Authors are so imperfect, that nothing can be built on them. But I hope I shall be able in another place to make it at least very probable, that there is even in those also a Motion which causes this effect. That the shining of *sea-water* proceeds from the same cause, may be argued from this, That it shines not till either it be beaten against a Rock, or be some other wayes broken or agitated by Storms, or Oars, or other *percussing* bodies. And that the *Animal Energies* or *Spirituos agit* parts are very active in *Cats eyes* when they shine, seems evident enough, because their eyes never shine but when they look very intently either to find their prey, or being hunted in a dark room, when they seek after their adversary, or to find a way to escape. And the like may be said of the shining *Bellies of Glowworms*, since 'tis evident they can at pleasure either increase or extinguish that Radiation.

It would be somewhat too long a work for this place *Zetetically* to examine, and positively to prove, what particular kind of motion it is that must be the efficient of Light; for though it be a motion, yet 'tis not every motion that produces it, since we find there are many bodies very violently mov'd, which yet afford not such an effect; and there are other bodies, which to our other senses, seem not mov'd so much, which yet shine. Thus Water and quick-silver, and most other liquors heated, shine not; and several hard bodies, as Iron, Silver, Brass, Copper, Wood, &c. though very often struck with a hammer, shine not presently, though they will all of them grow exceeding hot; whereas rotten Wood, rotten Fish, Sea water, Glowworms, &c. have nothing of tangible heat in them, and yet (where there is no stronger light to affect the sensory) they shine some of them so Vividly, that one may make a shift to read by them.

It would be too long, I say, here to insert the discursive progress by which I inquir'd after the proprieties of the motion of Light, and therefore I shall only add the result.

And, First, I found it ought to be exceeding quick, such as those motions of *fermentation* and *putrefaction*, whereby, certainly, the parts are exceeding nimbly and violently mov'd; and that, because we find those motions are able more minutely to shatter and divide the body, then the most violent heats or *menstruums* we yet know. And that fire is nothing else but such a *dissolution* of the Burning body, made by the most *universal menstruum* of all *sulphureous bodies*, namely, the Air, we shall in another place of this Tractate endeavour to make probable. And that, in all extreemly hot shining bodies, there is a very quick motion that causes Light, as well as a more robust that causes Heat, may be argued from the celerity wherewith the bodies are dissolv'd.

Next, it must be a *Vibrative motion*. And for this the newly mention'd *Diamond* affords us a good argument; since if the motion of the parts did not

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